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The
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Has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

Therefore, this

United States Patent

Grants to the person(s) having title to this patent the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States of America or importing the invention into the United States of America for the term set forth below, subject to the payment of maintenance fees as provided by law.

If this application was filed prior to June 8, 1995, the term of this patent is the longer of seventeen years from the date of grant of this patent or twenty years from the earliest effective U.S. filing date of the application, subject to any statutory extension.

If this application was filed on or after June 8, 1995, the term of this patent is twenty years from the U.S. filing date, subject to any statutory extension. If the application contains a specific reference to an earlier filed application or applications under 35 U.S.C. 120, 121 or 365(c), the term of the patent is twenty years from the date on which the earliest application was filed, subject to any statutory extension.

2. Todd Pichman

Acting Commissioner of Patents and Trademarks

Thomas E. Hawkinson Jr.

Attest



US005907335A

United States Patent [19][11] **Patent Number:** **5,907,335****Johnson et al.**[45] **Date of Patent:** **May 25, 1999**

[54] **WET WIPING PRINthead CLEANING SYSTEM USING A NON-CONTACT TECHNIQUE FOR APPLYING A PRINthead TREATMENT FLUID**

[75] **Inventors:** Eric Joseph Johnson, Encinitas; Eric Mattis, La Jolla, both of Calif.; Donald L. Michael, Corvallis, Oreg.

[73] **Assignee:** Hewlett-Packard Company, Palo Alto, Calif.

[21] **Appl. No.:** 08/747,883

[22] **Filed:** Nov. 13, 1996

[51] **Int. Cl.⁶** B41J 2/165

[52] **U.S. Cl.** 347/28; 347/33

[58] **Field of Search** 347/28, 33, 29, 347/22, 23; 15/256.05; 134/169 R

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Primary Examiner—N. Le

Assistant Examiner—Thien Tran

Attorney, Agent, or Firm—Jerry Potts

[57] **ABSTRACT**

A wet-wiping printhead cleaning system including a treatment fluid applicator placing treatment fluid on at least one of two elements involved in wiping, said two elements being a printhead orifice plate surface and a wiper, the system being so configured that treatment fluid is applied before wiping the printhead by projecting treatment fluid onto at least one element through the atmosphere, thereby avoiding direct contact between the applicator and said one element, the treatment fluid being placed so as to be available to assist in wiping a portion of the printhead orifice plate where the nozzle orifices are located to remove debris that may have accumulated, the treatment fluid lubricating the wiper so as to lengthen wiper service life and enhance wiping performance, as well as acting to render such accumulations more removable by wiping, the source of treatment fluid being uncontaminated by contact with either the printhead or the wiper.

14 Claims, 21 Drawing Sheets

